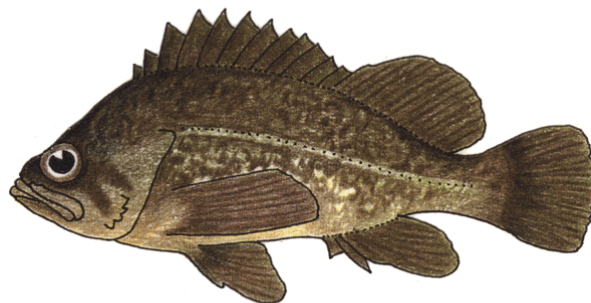


Kelp Rockfish, *Sebastes atrovirens*

1993-1999 Commercial Catch by Ports & Blocks



Marine Fishery Profiles

Volume 1: Nearshore

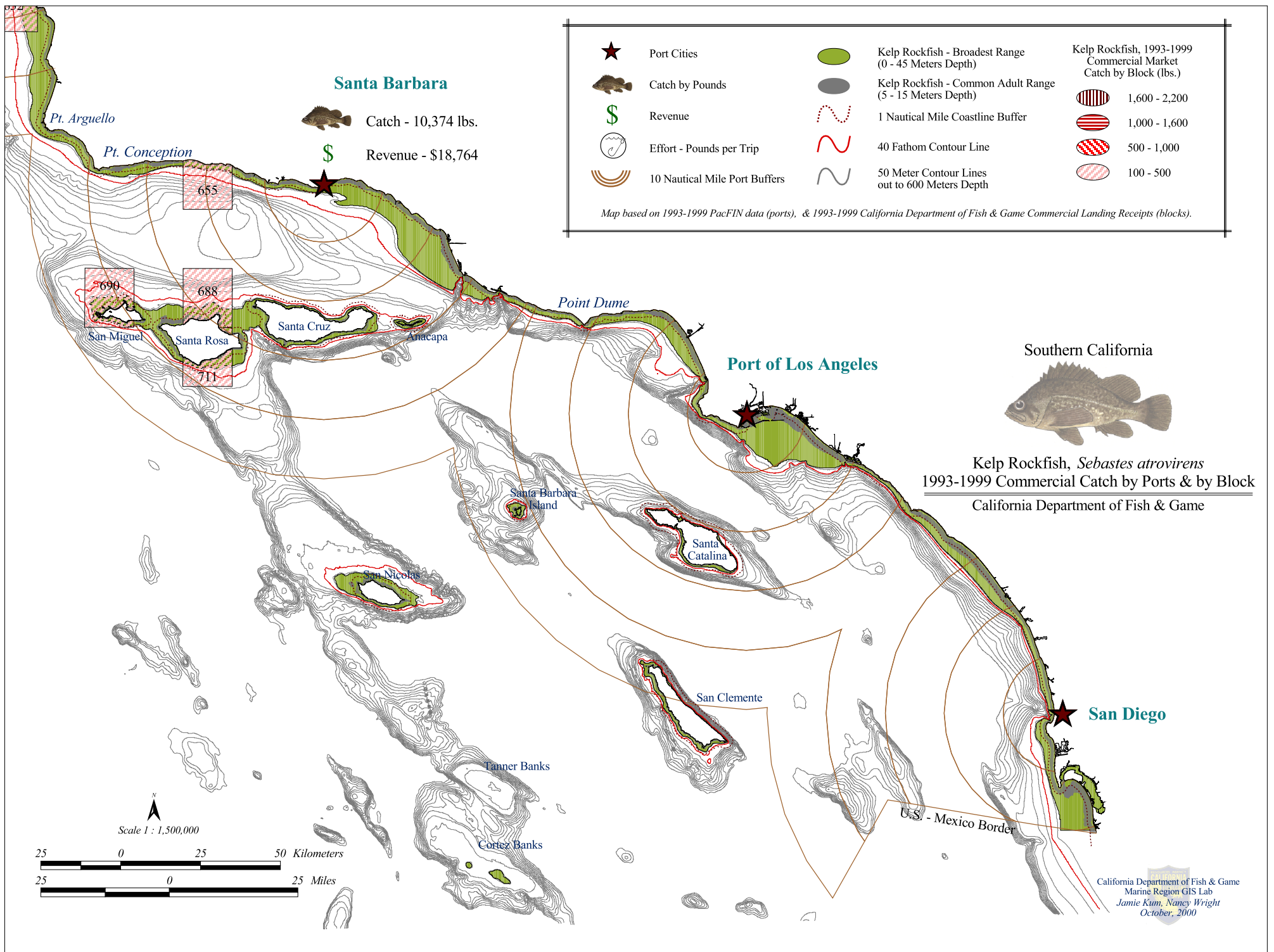
Marine Region GIS Lab

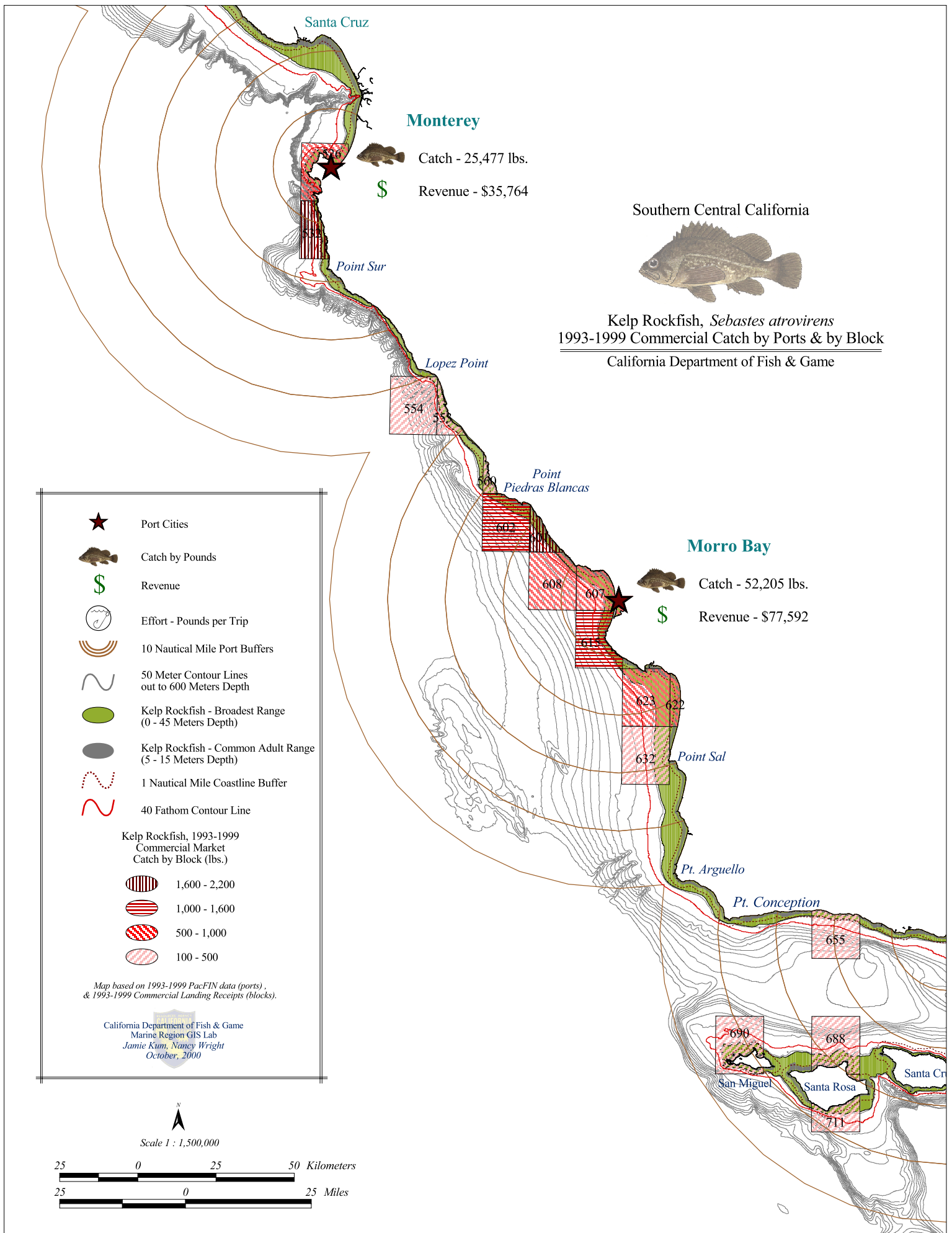
Nancy Wright	Eric Knaggs
Jamie Kum	Bob Leos
Chad King	Colleena Perez



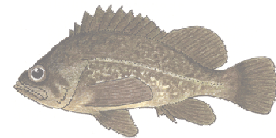
California Department of Fish & Game
Marine Region

December 2000





Northern Central California



Kelp Rockfish, *Sebastes atrovirens*
 1993-1999 Commercial Catch by Ports & by Block
 California Department of Fish & Game

Bodega Bay

Catch - 680 lbs.
 Revenue - \$532

San Francisco

Catch - 2,108 lbs.
 Revenue - \$2,395

Half Moon Bay

Santa Cruz

Monterey

Catch - 25,477 lbs.
 Revenue - \$35,764

- ★ Port Cities
- Catch by Pounds
- \$ Revenue
- Effort - Pounds per Trip
- 10 Nautical Mile Port Buffers
- 50 Meter Contour Lines out to 600 Meters Depth
- Kelp Rockfish - Broadest Range (0 - 45 Meters Depth)
- Kelp Rockfish - Common Adult Range (5 - 15 Meters Depth)
- 1 Nautical Mile Coastline Buffer
- 40 Fathom Contour Line

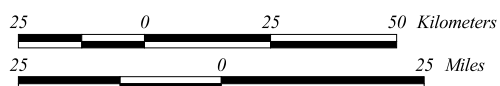
Kelp Rockfish, 1993-1999
 Commercial Market
 Catch by Block (lbs.)

- 1,600 - 2,200
- 1,000 - 1,600
- 500 - 1,000
- 100 - 500

Map based on 1993-1999 PacFIN data (ports) ,
 & 1993-1999 Commercial Landing Receipts (blocks).

California Department of Fish & Game
 Marine Region GIS Lab
 Jamie Kum, Nancy Wright
 October, 2000

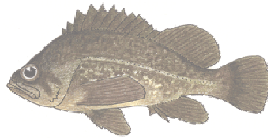
Scale 1 : 1,500,000



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Northern California



Kelp Rockfish, *Sebastes atrovirens* 1993-1999 Commercial Catch by Ports & by Block California Department of Fish & Game

- Port Cities
- Catch by Pounds
- Revenue
- Effort - Pounds per Trip
- 10 Nautical Mile Port Buffers
- 50 Meter Contour Lines out to 600 Meters Depth
- Kelp Rockfish - Broadest Range (0 - 45 Meters Depth)
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& 1993-1999 Commercial Landing Receipts (blocks).

California Department of Fish & Game
Marine Region GIS Lab
Jamie Kum, Nancy Wright
October, 2000

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Scale 1 : 1,500,000

25 0 25 50 Kilometers
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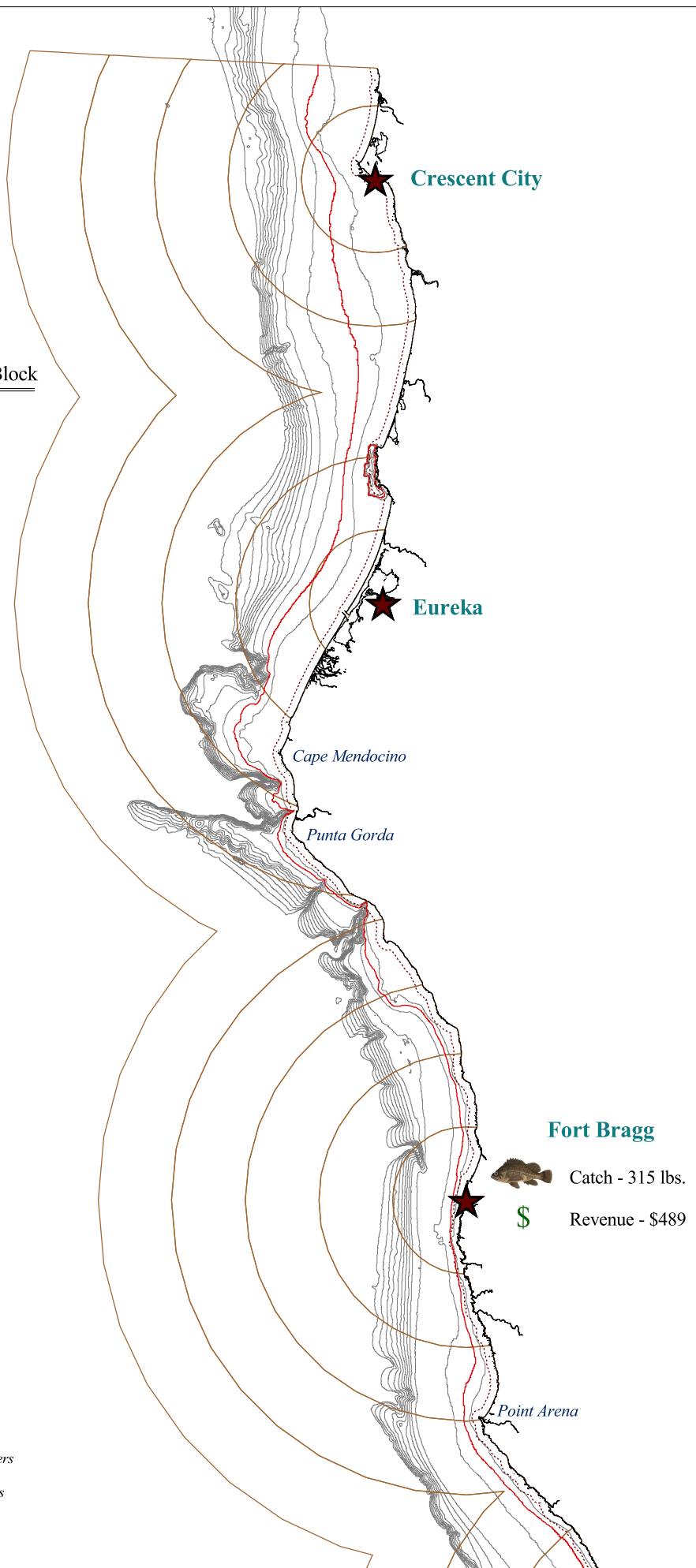


Figure 1. (refer to table 1) CDFG Commercial Receipts Data (1993 - 1999)
Total Pounds of Kelp Rockfish Caught and Average Price per Pound by Month

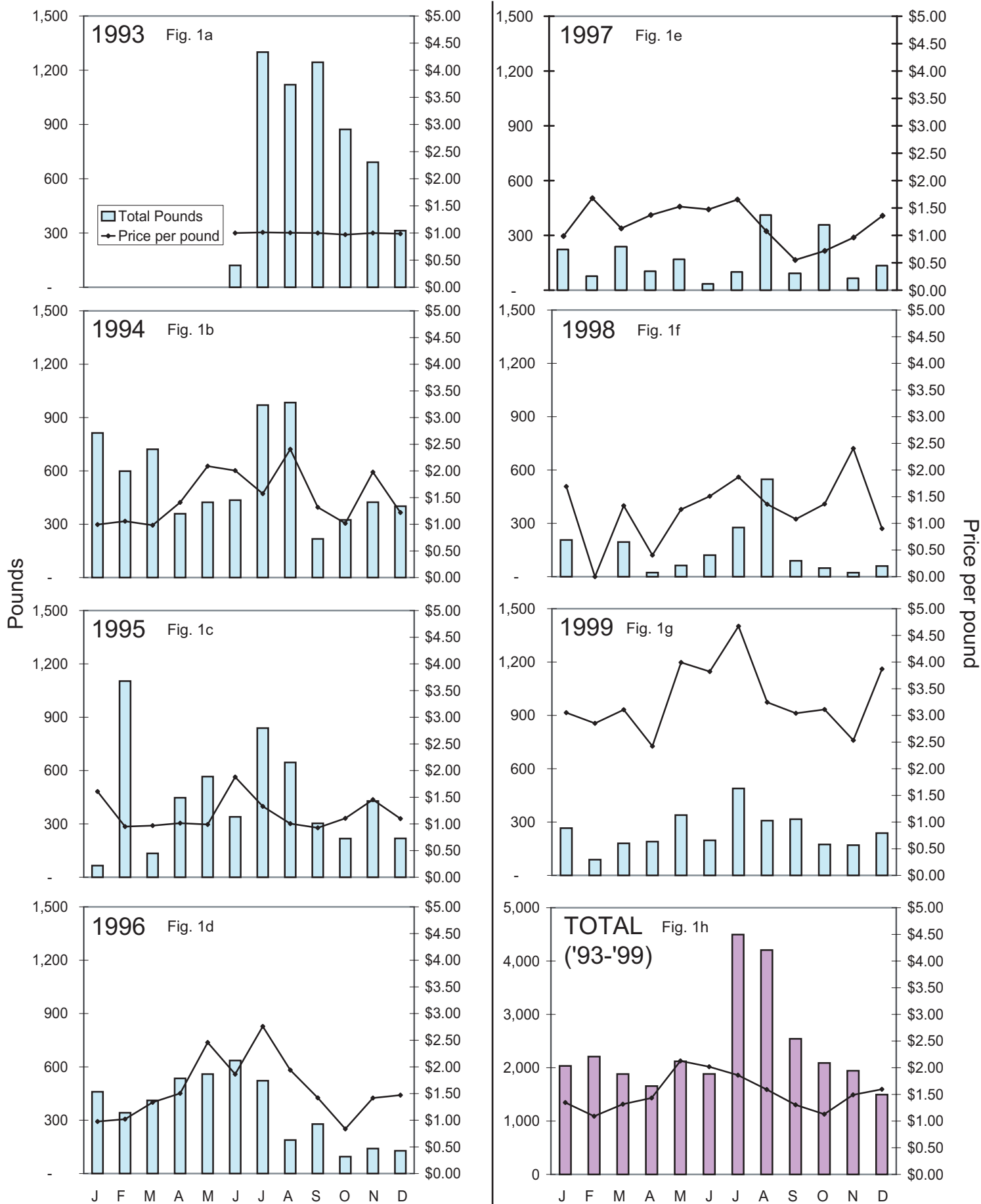


Table 1. (refer to fig. 1) CDFG Commercial Receipts Data (1993 - 1999)
Total Pounds of Kelp Rockfish Caught and Average Price per Pound by Month

1993
Table 1a

Month	Total Pounds	Price per Pound
Jan	no data	no data
Feb	no data	no data
Mar	no data	no data
Apr	no data	no data
May	no data	no data
Jun	121	\$1.00
Jul	1,300	\$1.01
Aug	1,120	\$1.00
Sep	1,244	\$1.00
Oct	873	\$0.97
Nov	692	\$1.00
Dec	313	\$0.99
Total	5,663	\$1.00

1997
Table 1e

Month	Total Pounds	Price per Pound
Jan	223	\$0.98
Feb	77	\$1.68
Mar	239	\$1.12
Apr	103	\$1.37
May	169	\$1.52
Jun	33	\$1.47
Jul	100	\$1.65
Aug	411	\$1.08
Sep	94	\$0.55
Oct	357	\$0.72
Nov	67	\$0.96
Dec	137	\$1.36
Total	2,009	\$1.11

1994
Table 1b

Month	Total Pounds	Price per Pound
Jan	813	\$0.99
Feb	599	\$1.06
Mar	722	\$0.98
Apr	359	\$1.41
May	424	\$2.09
Jun	436	\$2.01
Jul	970	\$1.57
Aug	985	\$2.41
Sep	218	\$1.32
Oct	324	\$1.02
Nov	424	\$1.98
Dec	402	\$1.22
Total	6,673	\$1.54

1998
Table 1f

Month	Total Pounds	Price per Pound
Jan	207	\$1.69
Feb	no data	no data
Mar	195	\$1.33
Apr	23	\$0.40
May	63	\$1.26
Jun	121	\$1.51
Jul	277	\$1.87
Aug	548	\$1.36
Sep	89	\$1.08
Oct	48	\$1.36
Nov	22	\$2.40
Dec	60	\$0.90
Total	1,653	\$1.46

1995
Table 1c

Month	Total Pounds	Price per Pound
Jan	66	\$1.61
Feb	1,103	\$0.95
Mar	134	\$0.97
Apr	447	\$1.01
May	566	\$0.99
Jun	340	\$1.88
Jul	839	\$1.33
Aug	646	\$1.00
Sep	303	\$0.93
Oct	218	\$1.11
Nov	429	\$1.45
Dec	219	\$1.10
Total	5,307	\$1.15

1999
Table 1g

Month	Total Pounds	Price per Pound
Jan	266	\$3.05
Feb	88	\$2.85
Mar	180	\$3.11
Apr	190	\$2.42
May	339	\$3.99
Jun	197	\$3.82
Jul	489	\$4.67
Aug	308	\$3.25
Sep	316	\$3.04
Oct	174	\$3.11
Nov	170	\$2.53
Dec	238	\$3.87
Total	2,956	\$3.49

1996
Table 1d

Month	Total Pounds	Price per Pound
Jan	460	\$0.98
Feb	342	\$1.02
Mar	412	\$1.34
Apr	535	\$1.50
May	560	\$2.46
Jun	636	\$1.86
Jul	522	\$2.76
Aug	189	\$1.94
Sep	279	\$1.42
Oct	95	\$0.84
Nov	141	\$1.42
Dec	128	\$1.47
Total	4,297	\$1.72

TOTAL
'93 - '99
Table 1h

Month	Total Pounds	Price per Pound
Jan	2,034	\$1.35
Feb	2,209	\$1.09
Mar	1,882	\$1.32
Apr	1,656	\$1.43
May	2,120	\$2.13
Jun	1,884	\$2.02
Jul	4,497	\$1.86
Aug	4,206	\$1.59
Sep	2,542	\$1.30
Oct	2,089	\$1.13
Nov	1,943	\$1.49
Dec	1,495	\$1.60
Total	28,558	\$1.55

Figure 2. (refer to table 2) Pacific Fisheries Information Network Data (1993 - 1999)
Total Pounds of Kelp Rockfish Caught and Average Price per Pound by Month

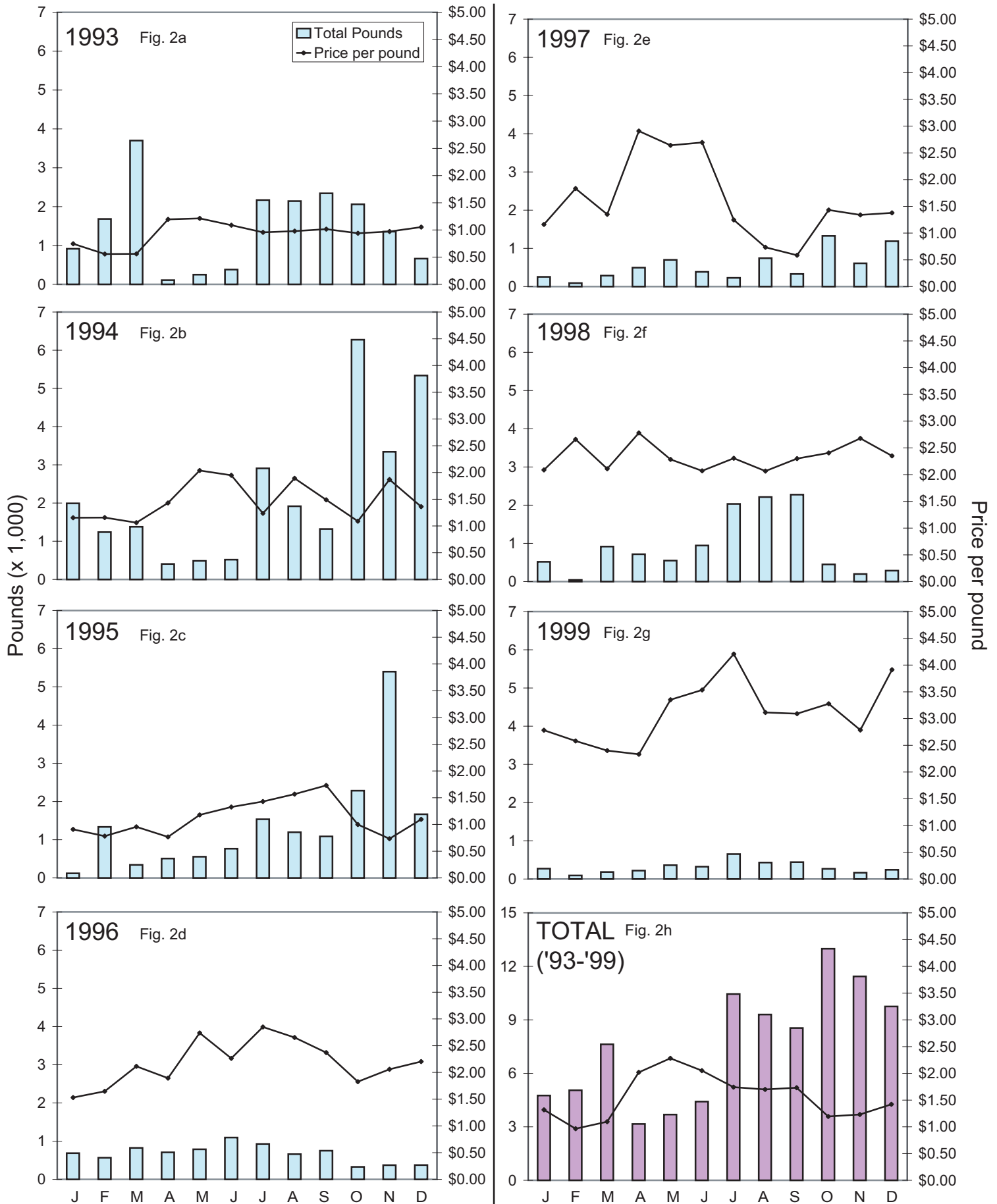


Table 2. (refer to fig. 2) Pacific Coast Fisheries Information Network Data (1993 - 1999)
Total Pounds of Kelp Rockfish Caught and Average Price per Pound by Month

1993
Table 2a

Month	Total Pounds	Price per Pound
Jan	915	\$0.75
Feb	1,682	\$0.56
Mar	3,699	\$0.56
Apr	108	\$1.19
May	249	\$1.21
Jun	380	\$1.09
Jul	2,169	\$0.96
Aug	2,141	\$0.98
Sep	2,342	\$1.01
Oct	2,060	\$0.94
Nov	1,358	\$0.97
Dec	661	\$1.05
Total	17,764	\$0.85

1997
Table 2e

Month	Total Pounds	Price per Pound
Jan	253	\$1.16
Feb	90	\$1.83
Mar	286	\$1.35
Apr	495	\$2.91
May	699	\$2.64
Jun	386	\$2.69
Jul	228	\$1.25
Aug	743	\$0.73
Sep	328	\$0.59
Oct	1,326	\$1.43
Nov	608	\$1.34
Dec	1,187	\$1.38
Total	6,629	\$1.59

1994
Table 2b

Month	Total Pounds	Price per Pound
Jan	1,991	\$1.15
Feb	1,238	\$1.16
Mar	1,379	\$1.06
Apr	405	\$1.43
May	487	\$2.04
Jun	519	\$1.95
Jul	2,908	\$1.24
Aug	1,916	\$1.89
Sep	1,320	\$1.49
Oct	6,276	\$1.09
Nov	3,342	\$1.87
Dec	5,337	\$1.36
Total	27,118	\$1.38

1998
Table 2f

Month	Total Pounds	Price per Pound
Jan	518	\$2.09
Feb	44	\$2.66
Mar	917	\$2.11
Apr	717	\$2.78
May	548	\$2.28
Jun	945	\$2.07
Jul	2,032	\$2.31
Aug	2,213	\$2.07
Sep	2,276	\$2.30
Oct	449	\$2.41
Nov	198	\$2.68
Dec	285	\$2.35
Total	11,142	\$2.25

1995
Table 2c

Month	Total Pounds	Price per Pound
Jan	120	\$0.91
Feb	1,336	\$0.78
Mar	341	\$0.96
Apr	508	\$0.77
May	555	\$1.18
Jun	766	\$1.33
Jul	1,535	\$1.43
Aug	1,196	\$1.57
Sep	1,086	\$1.73
Oct	2,284	\$1.00
Nov	5,399	\$0.73
Dec	1,667	\$1.09
Total	16,793	\$1.04

1999
Table 2g

Month	Total Pounds	Price per Pound
Jan	271	\$2.78
Feb	93	\$2.58
Mar	182	\$2.40
Apr	220	\$2.33
May	361	\$3.35
Jun	322	\$3.53
Jul	651	\$4.21
Aug	431	\$3.11
Sep	440	\$3.09
Oct	267	\$3.28
Nov	163	\$2.79
Dec	241	\$3.91
Total	3,642	\$3.30

1996
Table 2d

Month	Total Pounds	Price per Pound
Jan	687	\$1.53
Feb	566	\$1.65
Mar	823	\$2.11
Apr	707	\$1.89
May	788	\$2.74
Jun	1,095	\$2.26
Jul	926	\$2.85
Aug	660	\$2.65
Sep	751	\$2.37
Oct	327	\$1.83
Nov	372	\$2.06
Dec	374	\$2.20
Total	8,076	\$2.24

TOTAL
'93 - '99
Table 2h

Month	Total Pounds	Price per Pound
Jan	4,755	\$1.32
Feb	5,049	\$0.96
Mar	7,627	\$1.10
Apr	3,160	\$2.02
May	3,687	\$2.28
Jun	4,413	\$2.05
Jul	10,449	\$1.74
Aug	9,300	\$1.70
Sep	8,543	\$1.73
Oct	12,989	\$1.19
Nov	11,440	\$1.23
Dec	9,752	\$1.42
Total	91,164	\$1.49

Abbreviated Life History of the Kelp Rockfish (*Sebastes atrovirens*)

The coloring of kelp rockfish varies in hue from tan to pinkish brown to red, with dark mottling.

Distribution, Stock Structure and Migration

Kelp rockfish live in kelp beds and on rocky reefs, ranging from Timber Cove, northern California to Punta San Pablo, central Baja California. They are however most abundant between northern Baja and central California. This species is known to occur at depths up to 150 ft but are most common between 15 and 50 ft. Kelp rockfish are residential species, making no other migrations except possibly into deeper water during winter storms.

Age and Growth

Kelp rockfish have been aged to a maximum of 20 yr. Based on a calculated age-length relationship, and 8-in. TL kelp rockfish is approximately 3 yr old, an 11.6-in. fish is approximately 6 yr old, and a 13-in. fish is approximately 9 yr old. The largest recorded length for this species is 16.7 inches.

Reproduction, Fecundity and Seasonality

Male and female kelp rockfish reach maturity at 4 and 5 yr of age, respectively. Corresponding total lengths at maturation are 9.9 in. and 9.6 inches. Off central California, spawning takes place between December and June, with peak spawning in May, and fertilized eggs are present between December and January. Females are viviparous and the planktonic larvae are 0.16 to 0.17 in. SL at release, and will settle into the kelp canopy after 1 to 2 months. As juveniles, they will settle out of their pelagic phase and first appear in the kelp beds between April and August. Recruitment to the nearshore area in central California generally occurs during June and July.

Natural Mortality

Estimates of natural mortality are not available for this species.

Diseases

No information is available on diseases in kelp rockfish.

Predator/Prey Relationships

Juvenile and adult kelp rockfish are considered ~~A~~searchers[@] with respect to their prey, although adults are also known to ambush their prey. Prominent prey items for adults and juveniles include crustaceans, such as shrimp and amphipods, and small fish, particularly juvenile blue rockfish. The juveniles are prey of birds, pinnipeds, porpoises, lingcod, cabezon, salmon, and other rockfish. Predators of adult kelp

rockfish include sharks, dolphins, and seals.

Competition

The kelp rockfish is excluded from bottom areas of kelp beds by the territorial gopher rockfish.

Critical Habitat

Kelp rockfish occur in rocky reef and artificial reef areas, but most commonly in kelp beds. They spend their days drifting within kelp blades, sometimes upside down or resting on them. They are more active at night, leaving the kelp beds to search out or chase prey.

Status of Stocks

Local abundances have been studied for the kelp rockfish, however there is no comprehensive stock assessment throughout their range. This species is often taken in sport fisheries, such as spear fishing, but they are also taken in small numbers by commercial hook-and-line and traps. Their restricted habitat and limited movements make them highly exploitable. Therefore, local depressions probably occur in areas where diving, skiff fishing, or commercial fishing is concentrated.